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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/604,703

08/11/2003

David Elder

WT-001

1702

22914

7590

02/08/2007

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EXAMINER

TIBBITS, PIA FLORENCE

ART UNIT

PAPER NUMBER

2838

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

02/08/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/604,703

Applicant(s)

ELDER ET AL.

Examiner

Pia F. Tibbits

Art Unit

2838

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 88-108 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 88-108 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 July 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 11/9/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

This Office action is in answer to the RCE and amendment filed 11/9/2006. Claims 88-108 are pending, of which claims 88, 101, 102, 104, 105 are amended, and claims 106-108 are new.

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the switch position sensor, the operating position sensor, the second operating condition sensor, the motorized vehicle must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: element 750 described in the specification is not described in the drawings. Appropriate correction is required.

3. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter: "expiration of the period of time", "operating position sensor":

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L20: (0) "20050035737" and (expir\$5)

L71: (0) "20050035737" and (operating position sensor)

See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 88-108, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 88: the recitation

wherein, when the switching device is in the first ~~[[operating]]~~ position, the main battery is the sole source of electrical energy to the electrical system and wherein, when the switching device is in the second ~~[[operating]]~~ position, the at least one standby battery is the sole source of electrical energy to the electrical system, such that the main battery and the at least one standby battery are never connected in parallel and, therefore, never supply electrical energy to the electrical system simultaneously.

is a negative limitation, which does not have basis in the original disclosure, and **MPEP 2173.05(i)** states that "a negative limitation renders the claim indefinite when it was an attempt to claim the invention by excluding what the inventors did not invent rather than distinctly and particularly pointing out what they did invent". ***In re Schechter***, 205 F.2d 185, 98 USPQ 144 (CCPA 1953). "Any negative limitation or exclusionary proviso must have basis in the original disclosure." See ***In re Johnson***, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977). See also ***Ex parte Grasselli***, 231 USPQ 393 (Bd. App. 1983), aff'd mem., 738 F.2d 453 (Fed. Cir. 1984).

This recitation also contradicts the description in the specification of US 20050035737 at paragraph [0034]:

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at least one switching device has at least two operating positions. In a first operating position of the at least two operating positions the common positive terminal is coupled to the main positive output of the main battery and to a one-way charging circuit that precedes and is coupled to the auxiliary positive output, putting the batteries in parallel with each other. In a second

To continue prosecution it was assumed that the batteries supply electrical energy to the electrical system selectively.

Claim 101: the recitation

Claim 101 (currently amended): The apparatus of claim 88, further comprising:
a discharge cycling system coupled to the switching device and operable to periodically discharge the at least one standby battery even though the main battery is operating normally.

is not clear as it contradicts the recitation in independent claim 88 above, "the batteries never supply electrical energy to the electrical system simultaneously". To continue prosecution it was assumed that the batteries supply electrical energy to the electrical system selectively.

Claims 104-106, 108: see remarks for claim 88 above.

Claim 107: the limitation "second operating condition sensor" lacks antecedence and is unclear, i.e., where is the "first" one?

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

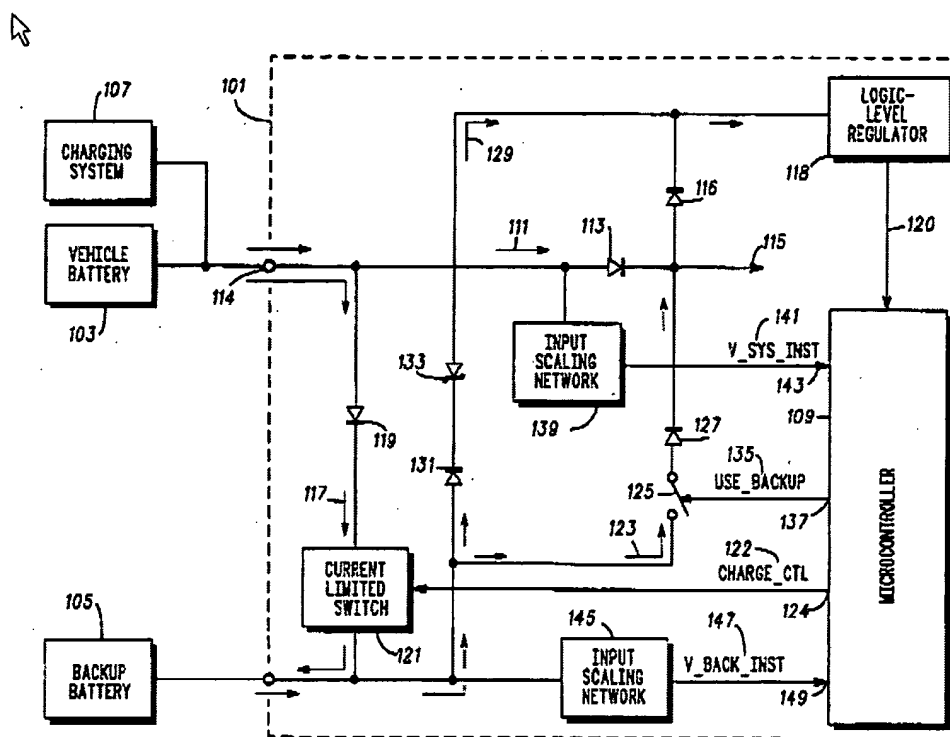
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 88, 95, 104, 105 are rejected under 35 U.S.C. 102(b) as being anticipated by **Bromley et al.** [5487956].

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As to claim 88, Bromley discloses an apparatus for reliably supplying electrical energy to an electrical system connected between a system positive terminal and a system negative terminal, the apparatus comprising:



a main battery 103 having a main positive output and a main negative output, the main negative output being electrically connected to the system negative terminal [see fig.1];

at least one standby battery 105 having at least one standby positive output and at least one standby negative output, the at least one standby negative output being electrically connected to the system negative terminal [see fig.1];

a one-way charging circuit 119 electrically connected between the main positive output and the at least one standby positive output, the one-way charging circuit 119 configured to facilitate charging of and prevent current flow from the at least one standby battery at all times

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during which the main battery is supplying electrical energy to the electrical system [column 3, lines 15-20]; and

a switching device 125 operable in at least two positions [see fig.1] to at least selectively electrically connect the system positive terminal to one of the main positive output and the at least one standby positive output, the switching device being operable in a first position to electrically connect the main positive output to the system positive terminal and electrically disconnect the system positive terminal from the at least one standby positive output, the switching device being further operable in a second position independent of the first position to electrically connect the at least one standby positive output to the system positive terminal and electrically disconnect the system positive terminal from the main positive output [see column 3, lines 36-48, 59-67; ,

wherein, when the switching device 125 is in the first position, the main battery is the sole source of electrical energy to the electrical system and wherein, when the switching device is in the second position, the at least one standby battery is the sole source of electrical energy to the electrical system, such that the main battery and the at least one standby battery supply electrical energy to the electrical system selectively [see column 1, lines 19-21].

backup battery is typically used. Thus, the backup or reserve battery powers the security system when main operative power is turned off, or cut off.

As to claims 95, 104, see remarks and reference above.

As to the method claim 105: the method steps will be met during the normal operation of the apparatus described above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented

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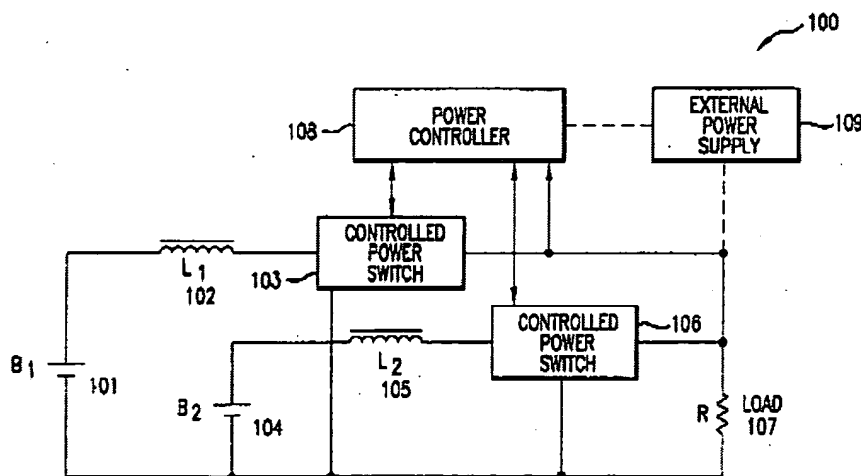
and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 88-90, 99-100, 104, 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Olson** [6727602], prior art disclosed.

The limitation "a one-way charging circuit" was interpreted in light of the disclosure describing in paragraph [0082]:

[0082] In the exemplary embodiment shown with the three position-switching device 300, the switching device 300 has a **first** or normal operating mode or **position** 350. In this position the vehicle or equipment operates off the main battery 100 which is always receiving a charge from the electrical system of the vehicle or equipment.

As to claim 88, Olson discloses an apparatus for reliably supplying electrical energy to an electrical system connected between a system positive terminal and a system negative terminal, the apparatus comprising:



a main battery 104 having a main positive output and a main negative output, the main negative output being electrically connected to the system negative terminal [see fig.1];

at least one standby battery 101 having at least one standby positive output and at least one standby negative output, the at least one standby negative output being electrically

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connected to the system negative terminal [see fig.1];

a one-way charging circuit 103 electrically connected between the main positive output and the at least one standby positive output, the one-way charging circuit configured to facilitate charging of and prevent current flow from the at least one standby battery at all times during which the main battery is supplying electrical energy to the electrical system.

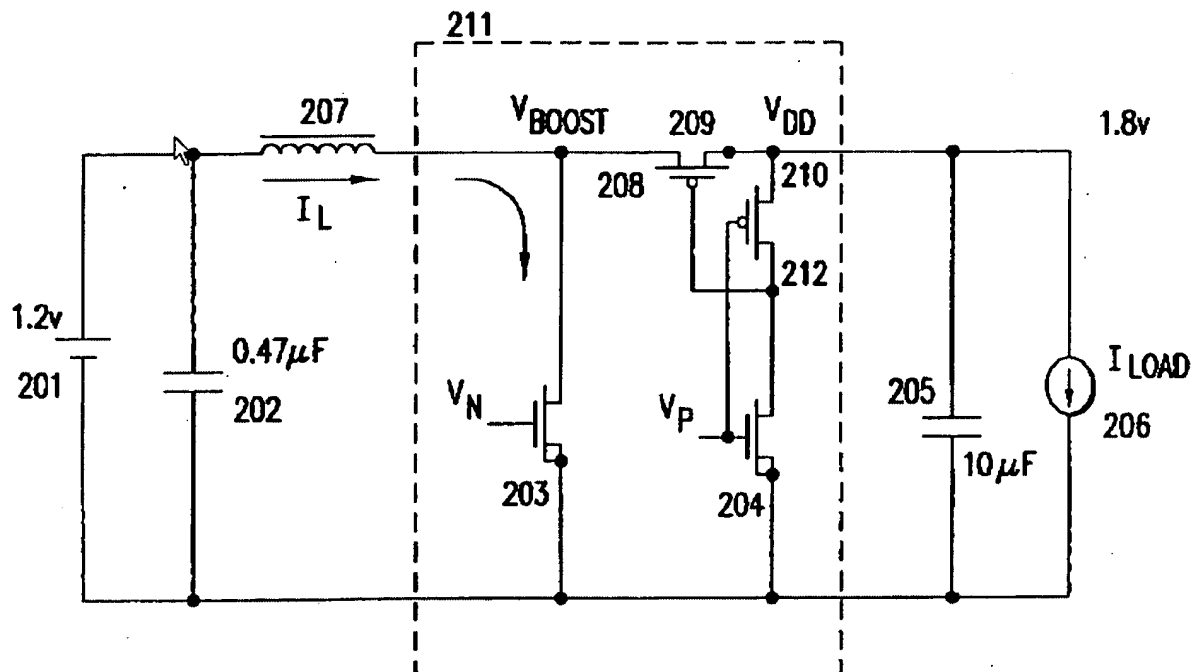


FIG. 2

Olson does not disclose a switching device operable in at least two positions.

However, Olson discloses in the abstract,

load voltage is not a predetermined voltage. The power controller causes a charge to be applied to the load by selectively closing the first controlled power switch, thereby providing a charge from the first battery to the load, and/or selectively closing the second controlled power switch, thereby providing a charge from the second battery to the load. A similar switching

at column 4, lines 58-64,

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(4) Each battery 101 and 104 is separately coupled to the load 107 via the first and second controlled power switches 103 and 106, respectively. When the first controlled power switch 103 is open, charge from the first battery 101 accumulates on the first inductor 102, and when the first controlled power switch 103 is closed, charge is delivered from the first battery 101 to the load 107. In a like fashion, when the second controlled power switch 106 is open, charge from the second battery 104 accumulates on the second inductor 104, and when the second controlled power switch 106 is closed, charge is delivered from the second battery 104 to the load 107.

at column 5, lines 29-32,

(7) In embodiments, the controlled power switches 103 and 106 may be open and I closed in an alternating fashion by the power controller 108, so that charge is delivered from only one battery at a time. Alternately, the controlled power

and at column 5, lines 38-44,

(8) The design depicted in FIG. 1 is advantageous in that it provides a separate connection between each battery 101 and 104 to the load 107 for discharging purposes. As a result, the depletion of either battery 101 and 104, in and of itself, will not result in a complete loss of power to the application device or circuit being powered, as represented by the load 107.

In other words, Olson discloses the claimed invention, at least selectively electrically connect the system positive terminal to one of the main positive output and the at least one standby positive output, the switching device being operable in a first position to electrically connect the main positive output to the system positive terminal and electrically disconnect the system positive terminal from the at least one standby positive output, the switching device being further operable in a second position independent of the first position to electrically connect the at least one standby positive output to the system positive terminal and electrically disconnect the system positive terminal from the main positive output, wherein, when the switching device is in the first position, the main battery is the sole source of electrical energy to the electrical system and wherein, when the switching device is in the second position, the at least one standby battery is the sole source of electrical energy to the electrical system, such that the main battery and the at least one

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standby battery supply electrical energy to the electrical system selectively, except for disclosing a switching device with two positions; Olson discloses a separate connection to each battery.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to make integral the control and connection to each battery in order to simplify the electrical system, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together involves only routing skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965). See **MPEP 2144.04**.

As to claim 89, Olson does not disclose the main battery is one of a six-volt, a twelve-volt, or a twenty-four volt battery. The main battery being one of a six-volt, a twelve-volt, or a twenty-four volt battery: the use of a six-volt, a twelve-volt, or a twenty-four volt battery as a main battery, absent any criticality, is only considered to be the use of "optimum" or "preferred" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the main battery/main unit disclosed by Exide Switch Technology in order to accommodate an application specifics, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416. *In re Aller*, 105 USPQ 233 (CCPA 1955), *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 90, Olson does not disclose the standby battery is one of a six-volt, a twelve-volt, or a twenty-four volt battery. The standby battery being one of a six-volt, a twelve-volt, or a twenty-four volt battery: the use of a six-volt, a twelve-volt, or a twenty-four volt battery as a standby battery, absent any criticality, is only considered to be the use of "optimum" or "preferred" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the standby battery/reserve unit disclosed by Exide Switch Technology in order to accommodate an application specifics, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its

As to claim 100, Olson discloses at column 7, lines 56-57:

As to the method claim 105: the method steps will be met during the normal operation of the bus described above.

As to claim 91, Bromley does not disclose a battery housing that includes a main battery compartment and at least one standby battery compartment, the main battery compartment containing the main battery, and the at least standby battery compartment containing the at least one standby battery.

(3) The motor vehicle electrical system has an accessory battery which is designated by reference numeral 26. The accessory battery 26 is a 12-volt battery and the positive terminal thereof is connected to a junction 28. The negative terminal of battery 26 is grounded, as illustrated. The electrical system also has a 4-volt cranking battery 30 which is utilized only for energizing an electric cranking motor. The cranking battery 30 has its negative terminal connected to junction 28 and its positive terminal is connected to a conductor 32. In the drawing, the batteries 26 and 30 have been illustrated as separate batteries, but it is to be understood that a single battery case or container could be provided which would include both batteries 26 and 30 and in such an arrangement the battery case would have a terminal corresponding to the junction 28, as well as positive and negative terminals.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make separable the main battery compartment containing the main battery and standby battery compartment containing the standby battery, as disclosed by Novakowski, in order to allow for easier positioning around the engine, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961). See MPEP 2144.04.

As to claim 92, Bromley and Novakowski do not specifically disclose the main battery compartment located atop the at least one standby battery compartment: as to the particular location of the main battery compartment, i.e., located atop the at least one standby battery compartment, absent any criticality, is only considered to be an obvious modification as it has been held by the courts that there would be no invention in shifting the location of a structure of a device to another location if the operation of the device would not thereby be modified. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) MPEP 2144.04.

As to claim 94, Bromley and Novakowski do not specifically disclose wherein the battery housing has external dimensions characteristic of a conventional vehicle battery housing: the use of a battery

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housing that has external dimensions characteristic of a conventional vehicle battery housing, absent any criticality, is only considered to be the use of "optimum" or "preferred" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the battery housing disclosed by Bromley and Novakowski in order to accommodate an application specifics, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416. *In re Aller*, 105 USPQ 233 (CCPA 1955), *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 95, Bromley and Novakowski disclose that it is known the one way charging circuit comprises a diode 119 [see Bromley'956 at fig.1; column 3, lines 19-20] and a diode 78 [see Novakowski '066 at fig.1; column 3, line 30].

As to claim 96, Olson and Novakowski do not specifically disclose the one way charging circuit has an amperage rating between 25 and 95 amps: the use of a one way charging circuit that has an amperage rating between 25 and 95 amps, absent any criticality, is only considered to be the use of "optimum" or "preferred" material that a person having ordinary skill in the art at the time the invention was made using routine experimentation would have found obvious to provide for the standby battery/reserve unit disclosed by Olson and Novakowski in order to accommodate an application specifics, since it has been held to be a matter of obvious design choice and within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use of the invention. See *In re Leshin*, 125 USPQ 416. *In re Aller*, 105 USPQ 233 (CCPA 1955), *In re Boesch*, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

As to claim 97, see remarks and references above.

11. Claim 93 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Bromley and Novakowski**, as described above, in view of **Geibl et al.** [hereinafter Geibl][6143438].

As to claim 93, Bromley and Novakowski do not disclose the battery housing further comprising at least one fill tube.

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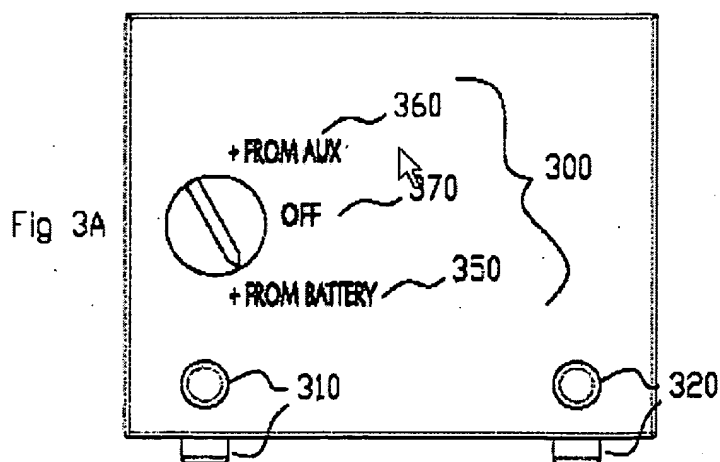
Geibl discloses in fig.6 a fill tube 104, which is part of a battery housing 106 to allow electrolyte to be added to the cells and to permit servicing, if required, during the life of the battery [see column 1, lines 47-49]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Bromley's and Novakowski's apparatus and include a fill tube, as disclosed by Geibl, in order to allow electrolyte to be added to the cells and to permit servicing, if required, during the life of the battery.

12. Claims 98, 103 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Olson**, as described above, in view of **Krieger et al.** [6377029].

As to claim 98, the originally filed specification lacks antecedence for a "third position" and positively describes in the abstract "two operating positions":

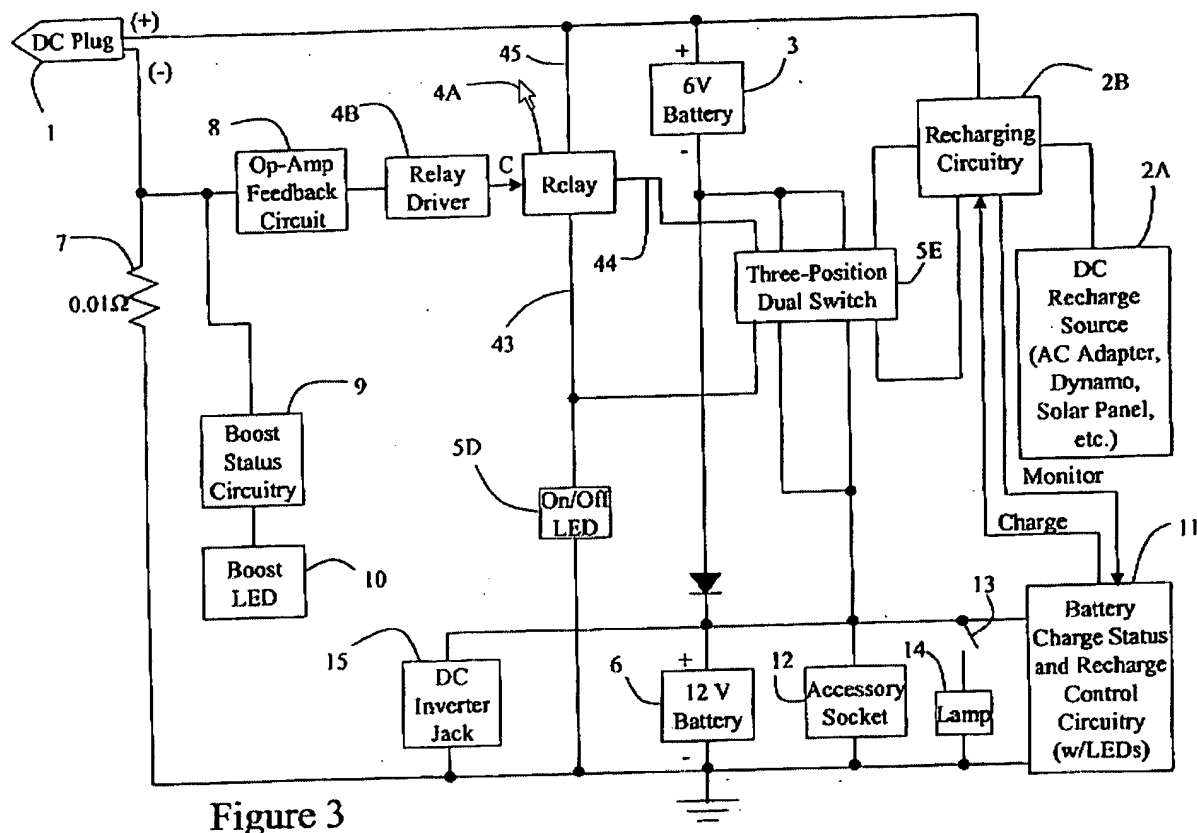
output. A switching device is provided with at least two operating positions. The two operating positions selectively engage the main battery and the auxiliary battery. In the **first** operating **position** of the at least

The amendment to the specification filed 11/23/2005 introduces a "tertiary or storage operating mode or position 370", supported by fig.3A. However, fig. 3A describes this tertiary or storage operating mode or position 370 as "OFF" for a manually operated switch. An "OFF" position is a **non-operating** position.



Olson does not disclose a three-position switching device.

Krieger discloses in figures 1-4A a three-position switch 5E,



whose positions correspond to "On," "Off", etc. [see column 4, lines 2-5]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Olson's apparatus and include a three-position switching device, as disclosed by Krieger, in order to allow for a OFF/non-operating position of the vehicle batteries.

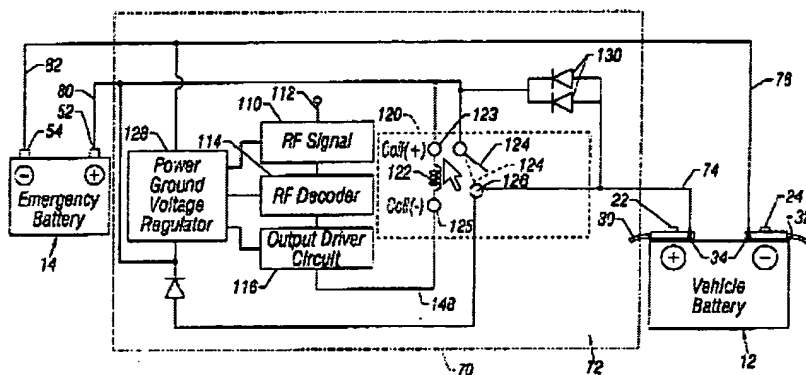
13. Claims 101, 102 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Olson**, as described above, in view of **Cook et al.** [6734651].

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As to claim 101, Olson does not disclose a discharge cycling system coupled to the switching device and operable to periodically discharge the at least one standby battery. However, Olson discloses at column 2, lines 64-67, and at column 3, lines 1-9:

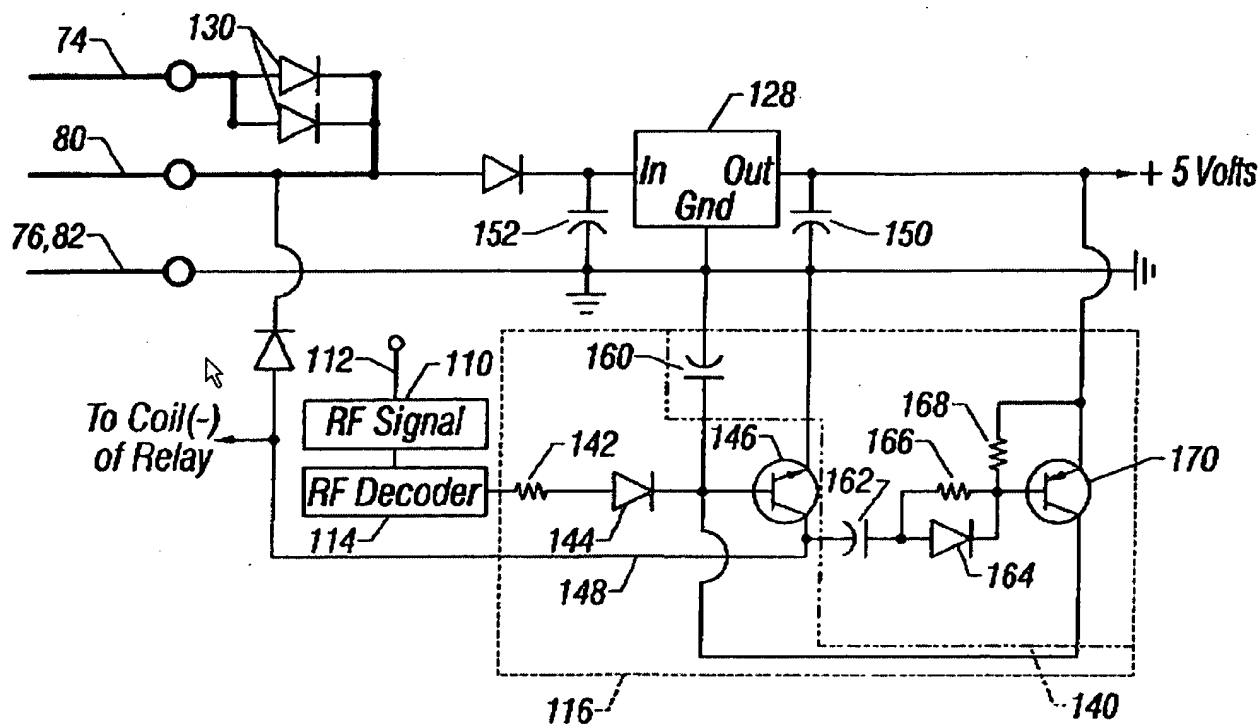
Because embodiments of the present invention provide a separate connection to each battery, the state of each battery may be monitored on an individual basis. As a result, each cell can be charged and discharged in an optimal way. For example, polarity reversal may be avoided by tracking the amount of charge that has been drawn off of each battery in the battery pack. Additionally, discharging and recharging may be evenly applied to each cell. Optimal charging and discharging of each battery will permit the battery to last through more charge/discharge cycles, hold more power before needing charging, and be far more reliable than batteries in conventional power supplies.

Cook discloses a multiple battery system for a vehicle comprises a primary battery; a reserve battery electrically connectable to the primary battery; and a control unit with a relay switch electrically connected between the primary and reserve batteries controlling cycling of the batteries.



The relay switch is operable on a timer circuit 140 selected to create a predetermined time period during which the relay switch 120 remains closed.

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**FIG. 3**

After the predetermined time period, the relay switch 120 returns to the normally open position to switch the reserve battery 14 out of the vehicle's electrical circuitry. In this manner, further discharge of the reserve battery is prevented. This feature is especially advantageous over the prior art relay switches that must be manually switched from an open position to a closed position prior to cranking the engine and switched again to the open position after the engine starts, since it is no longer necessary for the user to remember if the relay switch as been returned to the open position. In this manner, the reserve battery 14 is not subject to the same charge and discharge conditions of the primary battery 12, and therefore will be ready for use when the primary battery is insufficient for starting the motor and/or operating vehicle accessories [see column 6, lines 19-35]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Olson's apparatus and include a discharge cycling circuit 140 to control charge and discharge/cycling conditions of the standby/reserve battery, as disclosed by Cook, in order to prevent subjecting the standby/reserve battery

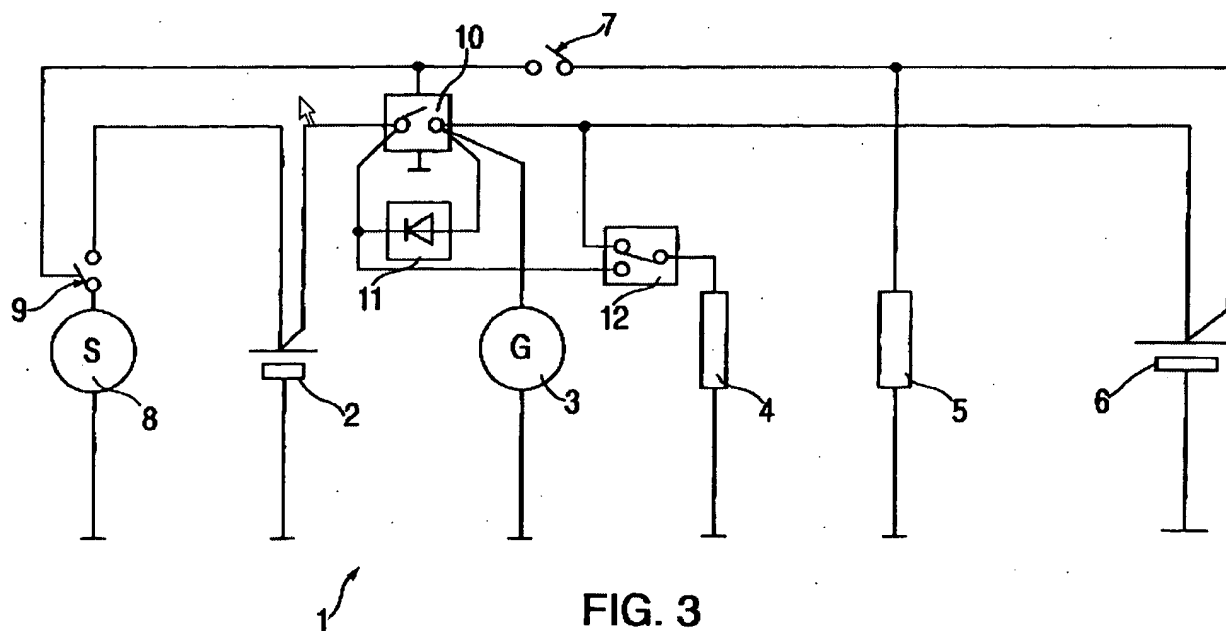
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to the same charge and discharge conditions of the main/primary battery, and therefore be ready for use when the primary battery is insufficient for starting the motor and/or operating vehicle accessories.

As to claim 102, see remarks and references above.

14. Claims 106-108 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Dierker** [6229279], in view of **McDermott et al.** [6545445].

Dierker discloses a battery system for reliably supplying electrical energy to an electrical system of a motorized vehicle, the electrical system being connected between a system positive terminal and a system negative terminal, the battery system comprising:



a main battery 6 having a main positive output and a main negative output, the main negative output being electrically connected to the system negative terminal;

at least one standby battery 2 having at least one standby positive output and at least one standby negative output, the at least one standby negative output being electrically connected to the system negative terminal;

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a one-way charging circuit 11 electrically connected between the main positive output and the at least one standby positive output, the one-way charging circuit configured to facilitate charging of and prevent current flow from the at least one standby battery 2 at all times during which the main battery is supplying electrical energy to the electrical system;

a switching device 10 positionable in any one of at least two positions to at least electrically connect the system positive terminal to one of the main positive output and the at least one standby positive output, the switching device being positionable in a first position to electrically connect the main positive output to the system positive terminal and electrically disconnect the system positive terminal from the at least one standby positive output, the switching device being further positionable in a second position independent of the first position to electrically connect the at least one standby positive output to the system positive terminal and electrically disconnect the system positive terminal from the main positive output, and

a switch position sensor [see column 3, lines 38-40] coupled to the switching device, the switch position sensor operable to detect a current position of the switching device;

12. Moreover, a measurement shunt (not shown) is necessary in order to sense the switchover conditions and the

a controller 4 coupled to at least the operating condition sensor, the switch position sensor, and the switching device, the controller operable to:

determine whether the switching device is in the first position based on an output of the switch position sensor,

wherein, when the switching device is in the first position, the main battery is the sole source of electrical energy to the electrical system and wherein, when the switching device is in the second position, the at least one standby battery is the sole source of electrical energy to the electrical system, such that the main battery and the at least one standby battery supply electrical energy to the electrical system selectively [column 2, lines 36-67].

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Primary load 4, necessary for the starting operation, e.g., an engine **control** device, is powered exclusively via vehicle electrical system battery 6. When ignition switch

an internal combustion engine. The closing of ignition switch 7 also causes power switch 10 to close, so that starter battery 2 and vehicle electrical system battery 6 are connected in parallel. Depending on the charge state

Dierker does not disclose the switching device 10 positionable in a third position independent of the first operating position and the second operating position to electrically disconnect the system positive terminal from both the main positive output and the at least one standby positive output, thereby preventing electrical energy from flowing out of either the at least one standby battery or the main battery to the electrical system. However, Dierker discloses at column 2, lines 42-44 :

system battery 6. Prior to the initiation of a starting operation, each of switches 7, 9, and 10, are open.

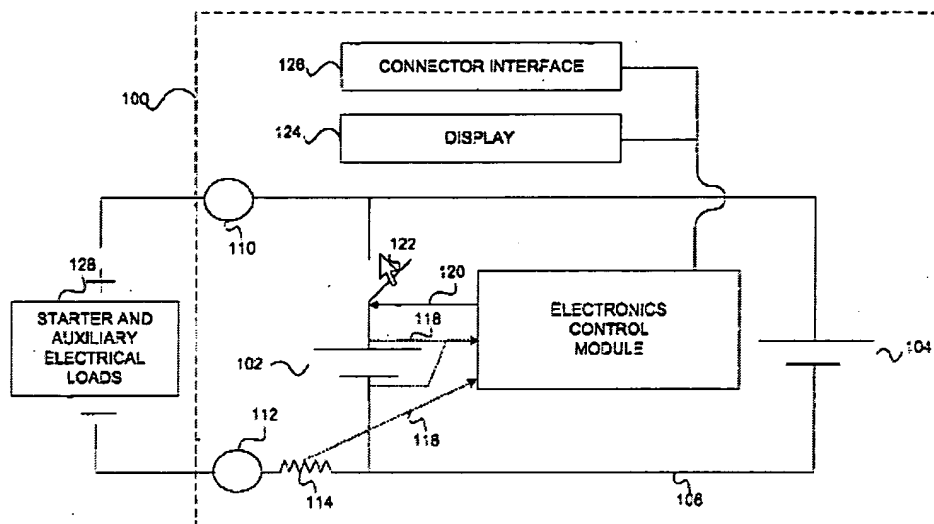
Therefore, it is an inherent function of the battery system, disclosed by Dierker, to include a third position independent of the first operating position and the second operating position to electrically disconnect the system positive terminal from both the main positive output and the at least one standby positive output, thereby preventing electrical energy from flowing out of either the at least one standby battery or the main battery to the electrical system, and MPEP 2100 states that the disclosure of a limitation may be expressed, implicit or **inherent**.

Dierker does not disclose an operating condition sensor coupled to the main battery, the operating condition sensor operable to detect at least one operating condition of the main battery; determine whether the main battery is in a discharge condition based on an output of the operating condition sensor; determine whether the main battery is in a discharge condition based on an output of the operating condition sensor; periodically cause the switching device to switch to the second position for a predetermined period of time at least responsive to determining that the switching device is in the first position and that the main battery is operating normally, the periodic switching of the switching device to the second position partially discharging the at least one standby battery; and

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upon expiration of the predetermined period of time, cause the switching device to switch back to the first position, thereby re-engaging the main battery and facilitating recharging of the at least one standby battery by the one-way charging circuit.

McDermott discloses a multiple battery system housing 100 [see fig.1]



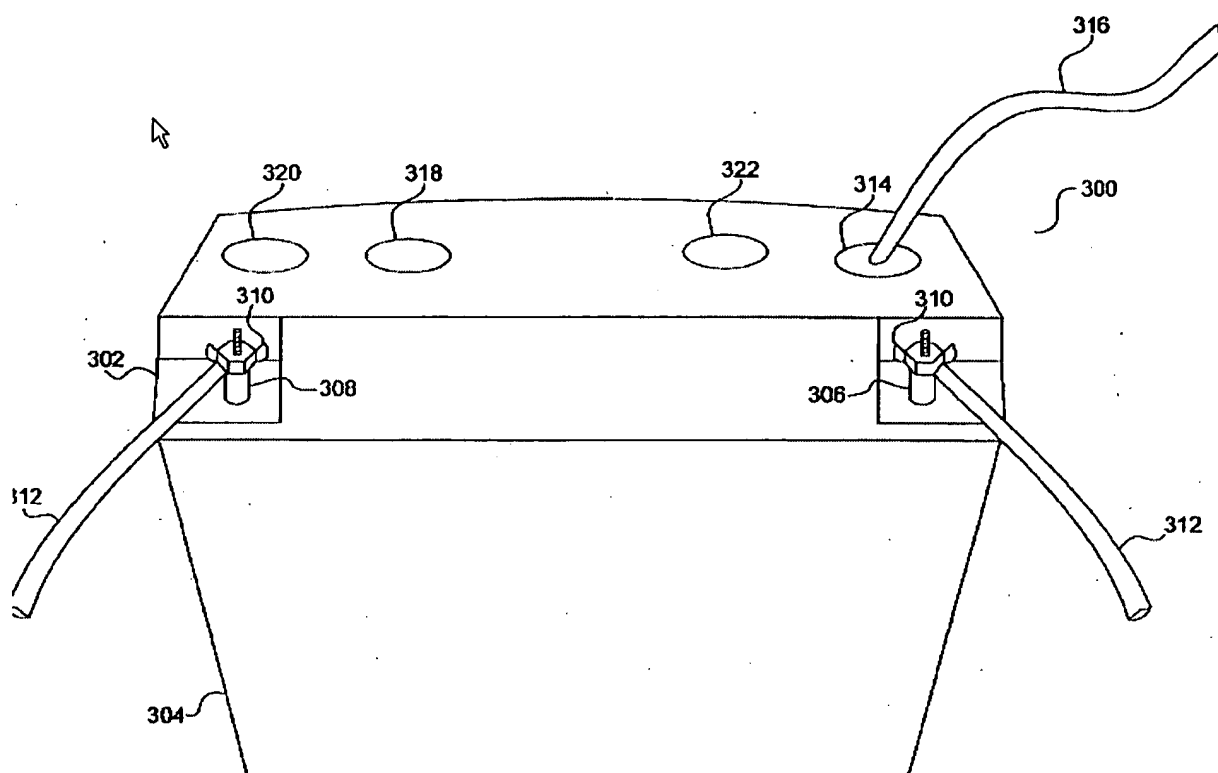


FIG. 3

having a common positive terminal 306, a common negative terminal 308 each coupled to an electrical system [see fig.3; column 6, lines 15-17], and a controller 108 coupled to the main electrical circuit and switching said at least one switching device based on input from an at least one operating sensor 116 (current input) and a second operating sensor.118 (voltage input) [see column 4, lines 40-58].

4) Electronics control module 108 monitors parallel circuit 106 for various parameters, including a start event. Electronics control module 108 may be a microprocessor, PROM, EPROM, or any other suitable processing device. Electronics control module 108 receives current input 116 from shunt 114, and voltage input 118 from starter battery 102. Upon detecting a start event,

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(5) Electronics control module 108 can control the discharge of starter battery 102 and auxiliary battery 104. The amount of discharge of starter battery 102 may be restricted by electronics control module 108 sending an open switch signal at a predetermined time or based upon monitored parameters. Electronics control module 108 may control the discharge of auxiliary battery 104 in a similar fashion.

periodically cause the switching device to switch to the second position for a predetermined period of time at least responsive to determining that the switching device is in the first position and that the main battery is operating normally, the periodic switching of the switching device to the second position partially discharging the at least one standby battery; and upon expiration of the predetermined period of time, cause the switching device to switch back to the first position, thereby re-engaging the main battery and facilitating recharging of the at least one standby battery by the one-way charging circuit [see column 5, lines 1-6].

(7) Electronics control module 108 also monitors parallel circuit 106 to determine when charging current is available. If either starter battery 102 or auxiliary battery 104 needs recharging, electronics control module 108 optimizes the recharging process by maintaining an optimal recharge protocol and decreasing the current as battery 102 or auxiliary battery 104 charge back up. For

Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Dierker's apparatus and include McDermott's teachings in order to optimize the process.

As to claim 107, see remarks and references above.

As to the method claim 108: the method steps will be met during the normal operation of the apparatus described above.

Response to Arguments

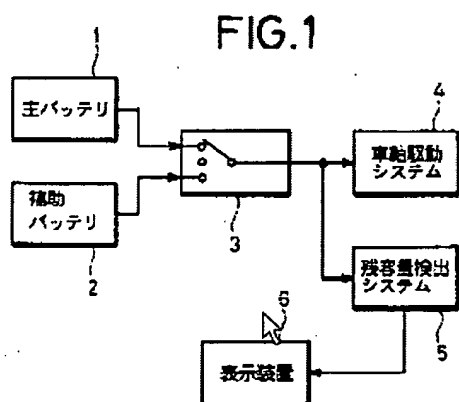
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15. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection, and in view of Applicant's revision of the claims, which is new issue.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art cited in PTO-892 and not mentioned above disclose related apparatus:

JP-0568036 discloses in the abstract and figures 1-7 a battery switching system including a controller 5 where when the output of a main battery 1 drops below a predetermined level, power supply to a vehicle driving system 4 is switched from the main battery 1 to an auxiliary battery 2 by means of a switch 3 while at the same time, a display 6 is also switched from the main battery to the auxiliary battery to provide a battery switching system in which an operator is notified the fact that a vehicle is driven through an auxiliary battery upon switching from a main battery to an auxiliary battery.



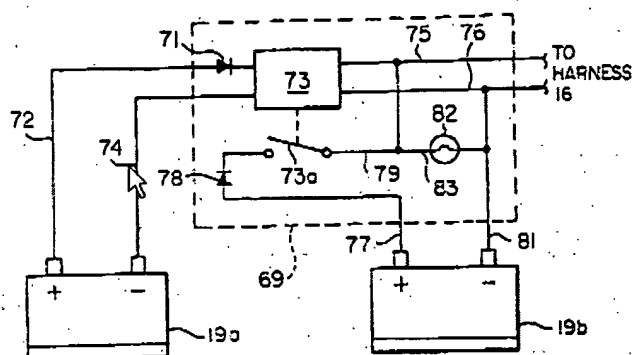
17.

GB-2220112, previously used as a reference, discloses a dual battery system:

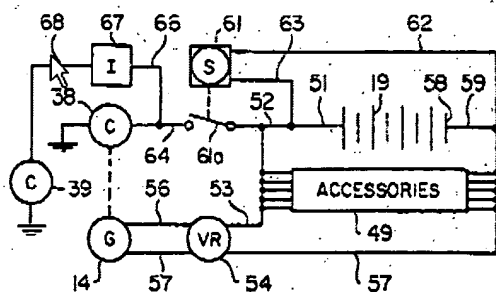
Worst [4489242] discloses a dual battery system including Sensor 61 is shown coupled to a switch element 61A whereby the normal voltage across battery 19 is sufficient to maintain switch element 61a in an open position. However, as the charge in battery 19 is drained down, the voltage responsive sensor 61 serves to release switch element 61a so as to form an additional circuit via switch element 61a

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to lead 64, electromagnetic clutch 38 and to ground. It is clear that the minimum charge level of battery 19 must not be below a level sufficient to operate clutch 38.

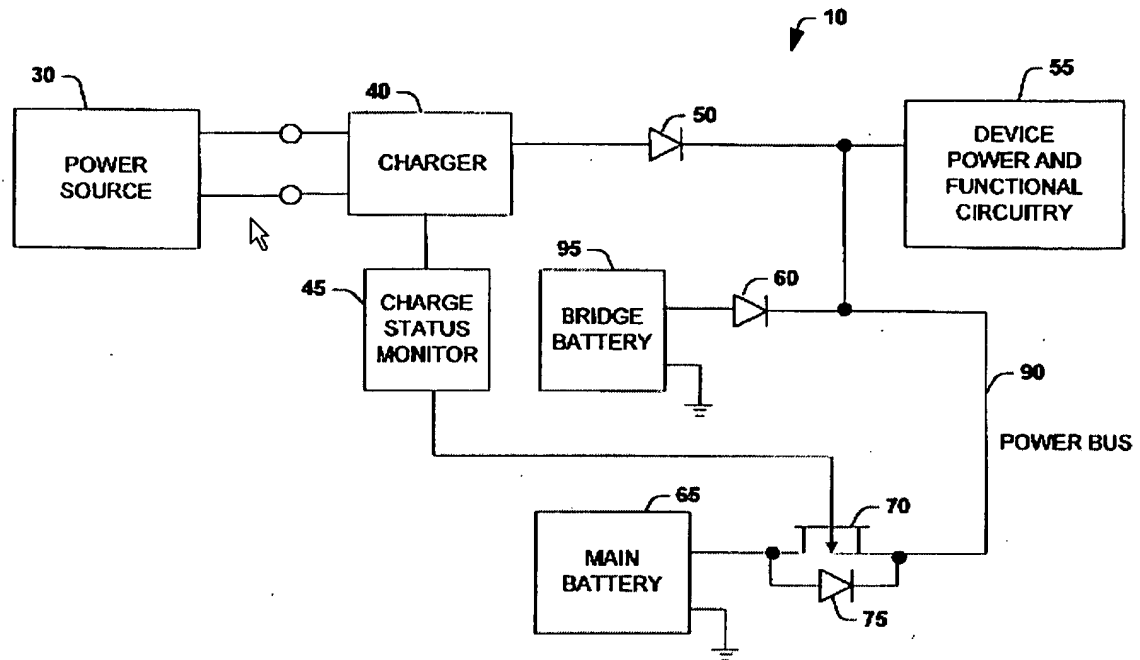


FIG_2



FIG_4

Leppo et al. [6172478] discloses a dual battery system:

**Fig. 1**

Tanaka [5154985] discloses in figures 1-11 a battery housing 10 that includes a main battery compartment and at least one standby battery compartment [see fig.2], the main battery compartment containing the main battery 38, and the at least standby battery compartment containing the at least one standby battery 42.

Witehira et al. [5175484] discloses a dual power system maintaining the power sources in electrically separate condition.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Pia Tibbits whose telephone number is 571-272-2086. If unavailable, contact the Supervisory Patent Examiner Karl Easthom whose telephone number is 571-272-1989. The Technology Center Fax number is 571-273-8300.

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19. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PFT

February 2, 2007

Pia Tibbits

Primary Patent Examiner